

REMARKS

Claims 22-38 are pending in the application.

Claims 29-36 are allowed.

Claim 38 is objected to.

Claims 22, 23, 28, 37, and 38 are rejected under 35 U.S.C. 102(e).

Claims 24-27 are rejected under 35 U.S.C. 103(a).

Claims 22 and 38 are amended.

No new matter is added.

Applicants request reconsideration and allowance of the claims in light of the above amendments and following remarks.

Claim Objections

Claim 38 is objected to because there is insufficient antecedent basis for the limitation “the first step region” found at line 13 therein. Applicants hereby amend claim 38 to recite “...a distance between the bottom portion of a first step region and the bottom portion of an adjacent step region that is across the second active region from the first step region...,” thereby providing sufficient antecedent basis for the phrase “the first step region.” As such, Applicants request withdrawal of the objection to claim 38.

Claim Rejections - 35 U.S.C. § 102

Claims 22, 23, 28, 37, and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,921,947 issued to Furuta, et al. (hereinafter “Furuta”). Applicants respectfully traverse this rejection.

Amended claim 22 recites, among other elements, “wherein a top surface of the second isolation layer is higher than that of the high voltage gate insulation layer to form a step region from the top surface of the high voltage gate insulation layer to the top surface of the second isolation layer, wherein a bottom corner of the step region is spaced apart laterally from a vertical axis passing through an upper edge corner of the second active region... wherein the bottom corner of the step region is above the upper edge corner of the second active region.” Support for this amendment can be found at, for example, FIG. 13 of the specification as

originally filed. Applicants respectfully submit that Furuta fails to teach or suggest at least these elements as now recited in claim 22.

For example, the “step region” shown in FIG. 1 of Furuta, and defined in the Office Action as “formed in the center of the [isolation] regions and faces ... layer GX1,” is not formed from the top surface of gate oxide film GX1 to the top surface of the isolation insulating film 2. Rather, the step region of Furuta is formed from top surface of the isolation insulating film 2 to a recessed surface of the isolation insulating film 2. Moreover, even if the “step region” of Furuta could be interpreted as being formed in the center of the isolation insulating film 2 and extending to the channel implant region 5A, Applicants respectfully submit the bottom corner of such a step region would be below the upper edge corner of the channel implant region 5A. For at least these reasons, Applicants respectfully submit that Furuta does not teach or suggest each and every element recited in amended claim 22. See M.P.E.P. §§ 2131, 2143.03.

Further, Furuta does not provide any suggestion that a step portion formed from the top surface of gate oxide film GX1 shown in FIG. 1 to the top surface of the isolation insulating film 2, and having a bottom corner above the upper edge corner of the channel implant region 5A, would be obvious. In fact, Furuta discloses that recessed portions DP must be formed below the upper edge corner of the channel implant region 5A to reduce the occurrence of variation in threshold voltage of a semiconductor device (see Furuta, FIG. 1, column 16, lines 40-47). Thus, any modification to Furuta that arrives at amended claim 22 would render Furuta unsuitable for its intended use and, therefore, would not be obvious. See M.P.E.P. § 2143.01(V).

Amended claim 38 recites elements similar to those found in amended claim 22. Accordingly, arguments presented above with respect to the rejection of claim 22 are also applicable with respect to the rejection of claim 38.

For at least the reasons provided above, Applicants submit that amended claims 22 and 38 are not anticipated, nor rendered obvious, by Furuta and, therefore, that the claims are in condition for allowance.

Claims 23, 28 and 37 depend from claim 22 and, therefore, include all of the elements recited in claim 22. Accordingly, Applicants submit that claims 23, 28 and 37 are in condition for allowance for at least the same reasons given with respect to the rejection of claim 22.

Claim Rejections - 35 U.S.C. § 103

Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuta in view of U.S. Patent No. 6,642,105 issued to Kim, et al. (hereinafter "Kim"). Applicants respectfully traverse this rejection.

Claims 24-27 depend from claim 22 and, therefore, include all of the elements recited in claim 22. As established above, claim 22 is neither anticipated, nor rendered obvious, by Furuta. Kim does not supply any teaching which, when combined with Furuta, renders claim 22 obvious. Accordingly, Applicants submit that claims 24-27 are in condition for allowance for at least the same reasons given with respect to the rejection of claim 22.

Allowable Subject Matter

Applicants appreciate the Examiner's allowance of claims 29-36.

CONCLUSION

For the foregoing reasons, Applicants request reconsideration and allowance of claims 22-38 of the application as amended. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.



Hosoon Lee
Reg. No. 56,737

MARGER JOHNSON & McCOLLOM, P.C.
210 SW Morrison Street, Suite 400
Portland, OR 97204
503-222-3613

Customer No. 20575